
PJM's Customer Load Reduction Pilot Program

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Customer Load Reduction Pilot Program

In an order dated May 17, 2000, the Federal Energy Regulatory Commission (FERC) announced a number of specific actions it will implement this summer on an interim basis to support the electric industry's efforts to ensure the continued reliability of the electric power system. These actions support efforts to increase generation supply, implement demand-side management, and maximize the amount of Available Transmission Capability (ATC) this summer.

In response to this order, among other actions PJM created a working group, the Distributed Generation User Group, to formulate a means to obtain the goals espoused in the FERC Order [Docket No. EL00-75-000] and to discuss distributed generation issues in general. The group discussed and agreed to a short-term objective of developing a pilot program for the summer of 2000 through which distributed resources can participate in PJM emergency procedures, focusing on equipment's emergency, back-up and load reduction capabilities.

The goal of PJM's Customer Load Reduction Pilot Program is to determine the effectiveness and appropriateness of the rules and procedures used during the pilot program, while providing another method for end-use customers to participate in the PJM Interchange Energy Market and receive economic incentives to reduce load. The pilot program is not intended to be a replacement for ALM, but rather an alternate method by which distributed resources can participate in PJM emergency procedures. This document summarizes the pilot program. In the longer term, the user group will address more general issues, related to the connection and operation of distributed generation resources. This document or another document will reflect this expanded scope.

The pilot program will begin immediately upon approval of the PJM ISO Board of Managers and end on September 30, 2000. It is reliability driven and will be implemented when PJM declares Maximum Emergency Generation, prior to purchasing emergency energy.

Pilot Program Participant Qualifications

Two primary types of distributed resources are candidates to participate in the PJM Load Reduction Pilot Program:

- ◆ A participant that has the ability to completely disconnect from the local distribution system and supply required load via local emergency backup generators
 - These generators are considered non-synchronized to the grid or synchronized to the grid with no net export to the grid, while serving local load.
- ◆ A participant that has the ability to reduce an explicit, measurable portion of its load

PJM membership is required to participate in the Load Reduction Pilot Program. Special membership provisions have been established for pilot program participants, as outlined in the Attachment. Any existing PJM Member may act as a third party for non-members. All payments are made to the PJM Member. Participants must become signatories to the PJM Operating Agreement, as described in the ***PJM Manual for Administrative Services for the Operating Agreement of the PJM Interconnection, L.L.C.*** However, the \$5,000 annual membership fee and the \$1,500 application fee are waived, along with the following other modifications:

- ◆ limited to be PJM Market sellers
- ◆ waived voting privileges; waived sector designation
- ◆ provisional membership ends on 12/31/00
- ◆ 30 day notice for waiting period is waived
- ◆ no requirement for 24/7 control center coverage
- ◆ No PJM-supported user group capability is permitted; however self-funded user groups are acceptable

Note: PJM ALM participants are not eligible to participate in this pilot program.

To participate in the pilot program, the distributed resource must:

- ◆ Be capable of reducing at least 100 kW of load
- ◆ Have the ability to participate for a total of at least 10 hours over the pilot period (ending September 30, 2000)
- ◆ Be available between 0900 and 2200 seven days a week
- ◆ Be capable of achieving full reduction within one hour of PJM's request to reduce
- ◆ Be capable of receiving PJM notification

- ◆ Meet the metering requirements, as described in the next section

Metering Requirements

The Customer Load Reduction Pilot Program participants must install metering equipment that meets the following requirements:

- ◆ Provides integrated hourly kWh values, for market settlement purposes, with a maximum of two percent error end-to-end (including PTs and CTs)
- ◆ For load reduction participants, metering that provides actual load change by measuring actual load before and after the reduction request, such that there is a valid integrated hourly value for the hour prior to the event and each hour during the event. This value cannot be estimated nor can be averaged over some historical period.

For generation resources, metering that is capable of recording integrated hourly values for the actual net generation, not gross output (net being net of use by generator, not net of local load).

Losses are not considered.

Registration

Participants must complete the PJM Load Reduction Pilot Program Registration Form that is posted on the PJM web site (www.pjm.com) and included in an attachment to this document. The following general steps will be followed:

1. The participant completes the PJM Customer Load Reduction Pilot Program registration form and emails it to PJM.
2. PJM reviews the application and ensures that the qualifications are met, including verifying that the appropriate metering exists. PJM will also confirm with the appropriate LSE and EDC that the “load reduction” is not under other contractual terms (i.e., LSE’s ALM program). EDC has two days to respond or PJM assumes acceptance.
3. PJM informs the requesting participant of the acceptance into the pilot program and notifies the appropriate LSE and EDC of the participant’s acceptance into the program.

Implementation

PJM will initiate the request for load reduction following the declaration of Maximum Emergency Generation. (Implementation of the Customer Load Reduction Program can be used for regional problems.) The purpose of Maximum Emergency Generation is to increase the PJM Control Area generation above the maximum economic level. It is implemented whenever generation is needed that is greater than the highest incremental cost. PJM will revise the emergency procedures to reflect the following steps:

1. The PJM Dispatcher issues Maximum Emergency Generation.
2. The PJM Dispatcher notifies PJM OI Management, PJM OI public information personnel, and Local Control Center dispatchers.
3. The PJM Dispatcher requests the need for emergency energy and contacts its neighboring control areas.
4. The PJM Dispatcher recalls off-system sales that are recallable (network resources).
5. The PJM Dispatcher begins to load Maximum Emergency Generation, requests load reductions from the Customer Load Reduction Pilot Program participants, and begins to purchase emergency energy from PJM Members and from neighboring control areas based on economics and availability.
6. The PJM OI dispatcher cancels the load reduction request and then cancels Maximum Emergency Generation, when appropriate. The minimum duration of a load reduction request is two hours, therefore, the reduction request may be extended if necessary.

Due to the variety of conditions and the potential for the conditions to change rapidly, some emergency activities may not occur in this order. PJM posts the request for load reduction on the PJM web site, on the Emergency Conditions page, and on eData (and possible pager notification). A separate All-Call message is also issued.

Verification

PJM requires that the load reduction metering data be submitted to PJM within 45 days of the event. If the data are not received within 45 days, no payment for participation is provided. Meter readings must be provided for the hour prior to the event, as well as every hour during the event.

The participant may either communicate the meter readings directly to PJM or via file transfer to the Customer Load Reduction FTP site. Files that are FTPed must be in the PJM-approved file format (see attachment). Upon receipt of the data file, PJM will forward the file to the appropriate Distribution Company for optional review. The Distribution Company has one week to provide feedback to PJM. All load reduction data are subject to PJM Market Monitoring Unit audit.

Market Settlements

Reimbursement for reducing load is based on the kWh relief provided. The magnitude of relief provided can be less than, equal to, or greater than the kW amount declared on the Customer Load Reduction Pilot Program Registration form.

PJM pays the higher of the appropriate zonal Locational Marginal Price (LMP) or \$500/MWh to the PJM Member that nominates the load. The PJM Member is also assessed a \$25 transaction fee for each event.

During emergency conditions, costs in excess of the LMP or \$500/MWh are allocated among PJM members in proportion to their net purchases from the PJM energy market during the hour. Consistent with this pricing methodology, charges are allocated to purchasers of energy, in proportion to their net purchases from the PJM energy market during the hour.

Reporting

PJM will submit the required reports to FERC on behalf of the Customer Load Reduction Pilot Program participants. PJM will also post this document, as well as any other program-related documentation on the PJM web site.

At the completion of the pilot program, PJM will prepare a report that summarizes the pilot program and will submit it to the PJM Members and the Energy Market Committee for review.

Special Application for PJM Membership

Customer Load Reduction Pilot Program participants will become non-voting PJM Members. Fees for application and membership are waived and participants do not need to complete the Credit Application. Pilot Project Participants are not eligible to take transmission service or purchase energy or capacity from the markets operated by PJM.

The following Membership Application forms must be completed:

- ◆ Membership Application Form
- ◆ Eligible Customer Qualification Form (Tariff Section 1.11)
- ◆ Standard Form of Agreement (provided in triplicate)
- ◆ Billing Contact Form
- ◆ Wire Contact Form
- ◆ Load Reduction Designation Form

Load Reduction Registration Form

All participants in the Customer Load Reduction Pilot Program must complete a registration form. The completed registration form should be emailed to ???. Upon receipt, PJM will review the form and provide feedback to the requesting participant.

PJM Customer Load Reduction Pilot Program Registration Form

Summer 2000

PJM Member Name:

PJM Member Org ID (if known):

Load Name:

Distribution Company (zone):

I. *Please describe how the load meets the hourly metering requirements.*

II. *What is the capacity of the interruptible?*

 kW

III. Operational Characteristics

A. *How is the reduction effected?*

Is it load to be cut?

(Yes or No):

Is it generation to be started?

(Yes or No):

Is it both load to be cut and generation to be started?

(Yes or No):

Give specifics:

B. Describe the desired communication option by which PJM will request the

interruption. (Please be specific – provide pager address, email address, etc.)

C. Is the interruption instantaneous?

(Yes or No):

If no, how long after requested by PJM will the load be fully interrupted?

Min

D. Are the number of kilowatthours of energy that may be interrupted limited?

(Yes or No):

If yes, give specifics.

Submitted by:

Title:

Date:

Phone:

Fax:

e-mail:

Received at PJM By

DATE:

Submit this form to:

CR&T ADDRESS?

Meter Data File Format

Customer Load Reduction Pilot Program participants may either communicate the meter readings directly to PJM or via file transfer to the Customer Load Reduction FTP site. Files that are FTPed must be in CSV file format and include the following columns:

- ◆ Clock hour ending
- ◆ Hourly integrated load (kWh)

Customer Load Reduction Examples

The scenarios described below are intended to illustrate how PJM would calculate the payments made to participants upon implementation of PJM's Customer Load Reduction Pilot Program. All examples assume the customers have acquired the appropriate form of PJM membership, completed the PJM Customer Load Reduction Pilot Program Registration Form, and been approved for participation by PJM. The following is a typical timeline by which this load could respond to PJM emergency procedures:

One day Prior to Operating Day:

2230 – PJM calls Max Emergency generation into the capacity for the next day. This information is posted on the PJM OASIS, web site, EDATA, etc.

Operating Day:

1300 – PJM Issues Max Emergency Generation. This information is posted on the PJM OASIS, PJM's web site, eDATA, etc.

1330 – PJM begins to recall off-system sales that are recallable.

1400 – PJM loads Max Emergency generation, begins to purchase emergency energy, and implements the Customer Load Reduction Pilot Program.

1800 – PJM cancels and begins unloading Max Emergency generation, curtails emergency purchases, and cancels the Customer Load Reduction Pilot Program.

Example 1

Customer ABC has a typical load of 500kW. Of this load, approximately 150kW may be shut down within one hour during emergency conditions. At 1400, Customer ABC receives notification that PJM has implemented the Customer Load Reduction Pilot Program. Customer ABC immediately begins the process of disconnecting the applicable load. All such load is disconnected by 1445. Customer ABC receives notification at 1800 that PJM has canceled implementation of the Customer Load Reduction Pilot Program and the load is reconnected to the system at 1830.

The following table illustrates how the customer metering and associated payments might appear:

Hour Ending	Integrated Load (kWh)	Delta (kWh)	Zonal LMP (\$/MWh)	Payment (\$)
1400	495	0	1000	0
1500	467.5	32.5	1000	32.50
1600	345	150	1000	150.00
1700	348	147	850	124.95
1800	346	149	400	74.50
1900	420	70	300	0

Example 2

Customer DEF has a typical load of 250kW. Customer DEF has the ability to completely disconnect from the local distribution system and supply required systems via local emergency backup generators. At 1400, Customer DEF receives notification that PJM has implemented the Customer Load Reduction Pilot Program. Customer DEF immediately commences startup of its backup generation and is disconnected from the distribution system at 1420. Customer DEF receives notification at 1800 that PJM has canceled implementation of the Customer Load Reduction Pilot Program, and the load is reconnected to the system at 1820.

The following table illustrates how the customer metering and associated payments might appear:

Hour Ending	Integrated load (kWh)	Delta (kWh)	Zonal LMP (\$/MWh)	Payment (\$)
1400	250	0	1000	0
1500	83.33	166.67	1000	166.67
1600	0	250	1000	250.00
1700	0	250	850	212.50
1800	0	250	400	125.00
1900	170	75	300	0

Example 3

Customer GHI has a typical load of 750kW. Customer GHI also has a 500kW backup generator on site that is capable of synchronizing with the local distribution system. At 1400, Customer GHI receives notification that PJM has implemented the Customer Load Reduction Pilot Program. Customer GHI immediately commences startup of the on-site backup generator (which had been in standby mode due to the PJM anticipation of Max Emergency conditions posted the night before.) The generator is synchronized and begins loading at 1440. Customer GHI receives notification at 1800 that PJM has canceled implementation of the Customer Load Reduction Pilot Program, and the generator is off-line at 1815.

The following table illustrates how the customer metering and associated payments might appear:

Hour Ending	Integrated Generator Output (kWh)	Zonal LMP (\$/MWh)	Payment (\$)
1400	0	1000	0
1500	155	1000	155.00
1600	498	1000	498.00
1700	495	850	420.75
1800	500	400	250.00
1900	125	300	0